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XII.—*On the Roads and Kloofs in the Cape Colony.* By Major C. C. Michell, Royal Engineers, K.H., Surveyor-General at the Cape of Good Hope. Communicated by Abraham Borraidale, Esq. Read June 27, 1836.

[The importance of the British colony at the Cape of Good Hope, covering an extent of surface nearly equal to the British Isles, and the daily increasing trade with the interior, give great interest to any information tending to facilitate communication between the various parts of the country—and as such, the remarks of Major Michell, being those of a thoroughly practical man, are very valuable. They are contained in a letter addressed by him to George Thompson, Esq., of Heerengracht, dated Rondebosch, Aug. 25, 1834.]

FROM a road-book, compiled chiefly from my own notes whilst travelling on horseback, and in waggons drawn by horses, I find that the following may be esteemed a fair average rate of travelling here, viz. :—on horseback, six miles per hour; in a horse-waggon, from five to five and a half; and in a waggon drawn by oxen, three. From the circumstance of being able to travel at this rate, a stranger would naturally conclude that pains have been taken to procure this facility over a surface so vast as from 110 to 115,000 square miles; but this is not the case. We are indebted for it to the nature of the soil, which, with the exception of a few sandy spots of inconsiderable extent, presents a good hard bottom, covered with a crust of iron-stone gravel, so that but for the mountain passes, which are tremendous, the communications throughout the colony would be unobstructed.

The advance of civilization in the colony, and the developement of its capabilities, are almost paralysed by the want hitherto experienced, of means to remove or surmount the natural obstacles above alluded to; but this, I trust, will not long be the case, and as our finances improve, this important subject will no doubt meet with due attention.

I have mentioned the extent which our territory probably squares to; I say probably, because no survey having ever been made whereby either the precise shape or extent of the colony could be obtained, that which we see in maps is but a compilation from the notes of travellers.

Is it not then a pity that, occupying so much country, we should be scarcely able to communicate with the greatest part of it for the interchange of commodities, and that a comparatively easy access should be possessed solely by the small strip of land between the western coast and the mountains constituting the Cape and Stellenbosch districts, whilst those of Clan William, Worcester, Beaufort, and Graaf Reynet, to say nothing of Somerset,

are in a manner shut out from us by the difficulties which the mountains present?

No one who knows the colony will regard the subject of the kloofs, or mountain passes, as otherwise than most important; I therefore trust that you will not think that it is for the mere sake of indulging in a favourite topic that I devote a few lines to it. I will not go into details, but consider the principal ranges which run parallel with the western and southern coast, as the great wall or barrier placed there to put our perseverance to the test, and leave us the choice of continuing till the end of time in our present stunted condition, or by the expenditure of a very few thousands to become one of the most valuable possessions of the Crown in every respect.

Place a map before you, Arrowsmith's last published is by far the best, and I will endeavour to give you a clear idea of our difficulties and wants, beginning with the district of Clan William in the north-west, and leading you down to Stellenbosch, and thence, eastward, to Graham's Town. If you were a military man, I should liken these principal ranges to two corps drawn up *en potence*, with opened ranks; the corps facing the west having the Oliphant's River and part of the Breede River between its front and rear ranks, whilst that which faces the southern coast has its front separated from its rear rank by part of the Breede, the Oliphant's, and the Kromme rivers.

The northernmost kloofs in the above-mentioned ranges are the Piquiniers and Cardouw. The former is the outlet for those who inhabit the Oliphant's River Valley, and all the country about Clan William; its situation is directly east of Piquetberg. The Cardouw is on the second line (rear rank) nearly east of the Piquiniers, and must be the first cleared by the people of the Adar mountains, Middle and Onder Roggeveld, unless the former prefer the Karroo Road and Hex River defile, and the latter should choose rather to head the mountains, and take to the sandy road between them and the coast. To convert these two kloofs into excellent mountain-roads would entail but an inconsiderable expense, and the people of Clan William richly deserve consideration, for they are the most punctual tax payers in the colony—arrears being scarcely known among them.

Proceeding southward, the next outlet we come to is the Tulbagh's Kloof, a natural gap formed by the passage which the Klein Berg River has made for itself, from the valley of Tulbagh where it takes its rise. This pass, though rugged, offers no serious obstacle; the ascents and descents are, for this country, scarcely worth noticing, so that the farmers of the beautiful valley of Tulbagh have, comparatively speaking, little to oppose their bringing their produce to the Cape market; although those whose

property lies at the southernmost end of the valley are obliged to travel a distance of thirty miles due north, and perform a complete counter-march on the egress through the Tulbagh Kloof. Opposite the latter (in the rear rank ranges) is the Witzenberg Pass, and its appurtenance, the Schurftberg; these open into the Cold Bokkeveld, or, 'land of cherries,' and are sometimes used by the middle Rokkeveld, Klein Rokkeveld, and Bidoum farmers, who may chance to prefer them to others equally bad—for to choose is difficult where all are execrable. I reckon the top of Witzenberg to be about 1800 feet above the valley of Tulbagh, and the ascent is nearly *à pic*; nevertheless, an excellent road could be made here, owing to the facilities offered by the material one would have to deal with; but then the Schurftberg, its inseparable appendage, would still remain to be accomplished, and a serious undertaking it would prove, to make anything of it. Twelve miles farther south, and through the same range, you find the Mostert's Hoek Pass, formed by the Breede River's escape from the Warm Bokkeveld, whence it has its source, a basin surrounded by high mountains, and which, but for the above gap, would become a splendid lake.

The Mostert's Hoek Pass is, for the lover of beautiful scenery, worth travelling any distance to see. Its length from Mr. Piet. Theron's house, where it debouches into the vale of Tulbagh, to its commencement on the Warm Bokkeveld side, is eight English miles. The first mile and a half from the latter point is of a nature so rugged and precipitous that it is necessary to take a waggon to pieces, carry it and its cargo piecemeal through, and then undergo all the trouble of putting together and reloading; notwithstanding 8000*l.* would enable an excellent pass to be made here; and as its distance from the Tulbagh Kloof is little more than twelve miles, there would be no absolute occasion for the improvement of the Eiland's Kloof, or any other in this vicinity, until the colony could perfectly afford it; besides, the above 8000*l.* would not be required all at once, the nature of the work being such that it would take full four years to accomplish. I consider the construction of a proper pass here, and another at Attaquas Kloof, or in such other part of the district of George's Ranges, or its neighbourhood, as should, upon its being surveyed, appear more eligible; as two works, which of themselves would, without the immediate execution of any others, double those branches of the public revenue that are derived from the internal resources of the colony.

At present, the inhabitants of Graaf Reynet, Beaufort, and a part of Worcester, have, of three evils of pretty equal magnitude, to select that one which, in the opinion of each, may seem to him the least. There is no alternative but to come through Schurftberg, Mostert's Hoek, or the Hex River Pass.

I have already mentioned the two former; the latter is the third door through which the traveller finds access into the valley of Worcester and Tulbagh. The objection to this pass is, its exceeding length, and the great number of times you are obliged to cross and re-cross the Hex River before you are completely disengaged from it, near its junction with the Breede. In winter this line of road is quite impracticable, as the Hex soon swells into a torrent, rapid, broad, and dangerous,

On the same range as, and to the southward of the Tulbagh Kloof, are the Bastiaan's Eilands (immediately opposite Mostert's Hoek) and Du Toit's Kloof. Of these I shall merely confine myself to giving the names, the two former being mere cattle-passes, and the great length of the latter,* and the expense it would entail to make anything of it, induce me to regard it more as a work to be achieved by our posterity than within the probably available means of our own time.

We now come to the angle formed by the junction of the western and southern ranges, near which are situated the beautiful villages of the Paarl and Stellenbosch, and the still more lovely group of farms called Hottentot's Holland, surrounded by an amphitheatre of hills—the east end of which, assuming a southern direction, stretches down to Hanglip, and this completes the great natural barrier between the Cape Peninsula and the district to the eastward of it.

To surmount this great barrier two works have been undertaken, within these few years, to the incalculable advantage of the colony, and to the honour of those under whose auspices and enlarged views they have been allowed and executed. The first of these is the French Hoek Pass, a splendid mountain-road in every respect; the work of that able engineer and gallant soldier, Lieut. Colonel Holloway, of the Royal Engineers, during the government of Lord Charles Henry Somerset. But it is a matter of regret that this fine work was not (owing to its situation) altogether as indispensable as the second, called Sir Lowry's Pass, executed by the orders of that excellent governor, Sir Galbraith Lowry Cole, in 1830,† at a very trifling cost, for so I consider the sum of 3000*l.* compared with the benefits which have accrued to the colony generally from this work; and to the neighbouring districts in particular, where double the quantity of grain is now sown, and double the number of waggons, of course, cross the mountain.

No better proof can be given of the advantages the public have derived from having this facility of communication afforded to

* About ten miles of very difficult rocky road.

† Performed under the immediate superintendence of the author of this paper, the Surveyor-General—a lasting memorial of his skill and perseverance.—*ED.*

them, than is exhibited in the fact of the toll levied there producing to government at present the annual sum of 365*l.*, or 12 per cent. ; whereas, prior to the opening, 150*l.* was as much as it could realize.

Every one who has read Barrow, Burchell, or other travellers of note, must have been appalled at the very description of the ascent or descent of a waggon by the old Hottentot Holland Kloof ; and will feel pleasure in knowing that the same may now be performed at a brisk trot, having become as good a road as any in England.

The French Hoek road leads to Worcester, by the Bosjesveld, or to Genaadendal, by the Donker Hoek ; the former is bad part of the way, and the latter is execrably bad the whole of the way ; and this is all that the French Hoek can be said to lead to, unless the Hex River Pass were improved by an endless string of bridges at an enormous expense.

The traveller who goes eastward, next comes to the Houw Hoek Pass, which is at a distance of about fifteen miles from Sir Lowry's. This was another stumbling block, without the removal of which the making of Sir Lowry's Pass would have been a very incomplete thing. Its execution was readily sanctioned by the Home Government, and its cost was barely 600*l.* From hence you have an excellent natural road, as far eastward as the village of George, a distance of 300 miles from Cape Town. From George the passage into the Long Kloof (the regular road to Uitenhage) is over the Cradock's Kloof or pass. This is an awful obstacle ; an attempt to describe it would perhaps spoil what otherwise the imagination, being left to its own workings, would form a better conception of ; it mocks description. You must see the fact to believe that any waggon had ever dared attempt to climb it.

There is, indeed, no absolute necessity for crossing into the Long Kloof at this particular point. The Attaquas Kloof offers much fewer difficulties, and could be made an excellent pass at a very trifling cost ; nor would there be a single dissentient voice in selecting it, but for the existence of the village of George, situated immediately at the foot of the Cradock's Kloof, and which it is presumed would die a natural death, if the latter ceased to be the principal thoroughfare.

I think, however, that were the means of road-making in our hands, no such narrow considerations would be allowed to stand in the way of a work which would ensure so great a public benefit.

From the foot of the Cradock's Pass, or from the point where the Attaquas opens into the Long Kloof, you wind your way with comparative ease and comfort through the latter, crossing and

re-crossing the river, by which it is fertilized, until you reach the banks of the Camtoos, where an excellent ferry-boat conveys you over in safety to recommence your journey towards Uitenhage, through a country improving at every step in beauty and interest. From hence to Graham's Town nothing remarkable occurs till you reach Howison's Kloof, which has lately been improved by the inhabitants of Graham's Town, contiguous to which it lies.

There are a few more kloofs farther inland than I have enumerated. The principal of these is Kujman's Kloof, in the district of Swellendam, and the Caledon, in the George district; but my object being to draw attention to the points where improvements are most necessary, and would be attended with great advantages, both immediate and prospective, I do not regard the last mentioned as belonging to my province, but rather to that of the beauties of African scenery.

I will conclude by remarking, that the small sum of 13,000*l.* would in all probability suffice to remove the two principal obstructions to our prosperity, viz. the Attaquas Kloof, which, if improved, would enable the farmers of the Oliphant's River, Congo, and Long Kloof, to transport their grain to Mossel Bay; besides what I have already said about it and the Mostert's Hoek, the great door to all the north-eastern parts of the colony. I am moreover under the impression that there is much land at this moment which has not been applied for by settlers, owing to the natural conclusion that its occupation would only be a source of expense to the possessor so long as the impossibility exists of transporting to market the fruits resulting from its cultivation.

Under the head of obstacles to that indispensable requisite, a free circulation, I must not omit mentioning, that we are entirely destitute of bridges. We have, it is true, a few tolerable ferry-boats (about five or six at the utmost; little enough for so extensive a country); the best of these are at the Berg, Breede, and Camtoos Rivers; but there are many streams, such as the Erste, Palmiet, Bot, and Buffelsjaght, &c., which, although they contain little water in summer, yet in the winter season acquire sufficient magnitude and impetuosity to be impassable for many days together. And it is only those persons who have experienced the miseries of "outspanning" on their banks, drenched to the skin whilst waiting four or five days for the waters to run out, who can fully estimate the advantage and comfort that would be derived from the construction of a few plain bridges on spots judiciously selected.

I think that if the sum I have already mentioned were increased to twenty thousand pounds (to speak in round numbers), we should have no reason to complain of the want of either roads or bridges for the next two centuries, when, our wealth having had time to

increase by the facilities thus afforded, and the population having become more dense, the rest of the passes, if found necessary, would, I have no doubt, be then opened in the same way that such things are done in Europe at present, viz., by joint-stock companies; which method is out of the question in our present condition.

The granting of this sum would, after all, be but as a kind of loan, as "Sir Lowry's Pass" has plainly proved, for it is paying itself rapidly. Maybe, even if it were looked into, besides what the toll has already done towards paying off the capital, we should find that the increase in the sums paid for opyaaf, or tax on grain, wine, and cattle, market dues, &c., of the districts of George, Swellendam, and Caledon, have also contributed largely towards it. Perhaps I have already made this paper far too long—although I could say a great deal more; but the subject is not of sufficiently general interest, although intensely interesting to all those resident in the colony of the Cape of Good Hope.

XIII.—*Notice of a Journey to the Northward and also to the Eastward of Cuzco, and among the Chunchos Indians, in July, 1835.* Communicated by General Miller, of the Peruvian Service. Read June 13, 1836.

SHORTLY after my arrival at Cuzco, in January, 1835, I conceived the idea of planting a military colony on the banks of some navigable river on the eastern side of the Andes, with a view, first to facilitate the discovery or examination of the vast pampas or plains lying between what may be called the civilized confines of Peru and Brazil, leaving an immense intervening breadth; and, secondly, to endeavour to open a direct communication with Europe by means of the river Marañon or the Amazons. As a preparatory step I determined to examine the valley of Sant' Ana, to the north-west of Cuzco, to see if there were an eligible tract of country in advance of the valley, for the settlement of a hundred married soldiers with their officers and families: with this view I left Cuzco in the middle of April, and travelling to the north-westward passed the town of *Urubamba*, and continued along the banks of the river Quillabamba into the valley of Sant' Ana, where I took up my quarters at the village of Incharate, twenty-five miles beyond the town of Sant' Ana, and about one hundred and twenty miles to the north-west of Cuzco.

The valley of Sant' Ana, extending nearly fifty miles, watered by the river, or rather the mountain torrent of the Quillabamba, is highly picturesque; bounded on each side by lofty mountains green to their summits; their skirts clothed with thick forests,



